

# Librarian instruction-delivery modality preferences for professional continuing education

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DOI: 10.3163/1536-5050.98.1.017

**Objectives:** Attending professional continuing education (CE) is an important component of librarianship. This research study identified librarians' preferences in delivery modalities of instruction for professional CE. The study also identified influential factors associated with attending CE classes.

**Methods:** Five instruction-delivery modalities and six influential factors were identified for inclusion in an online survey. The survey completed by members of the American Library Association (ALA), Special Libraries Association (SLA), and Medical Library Association (MLA) provided the data for analysis of librarian preferences and influential factors.

**Results:** The majority of respondents were MLA members, followed by ALA and SLA members.

Librarians from all three library associations preferred the face-to-face instructional modality. The most influential factor associated with the decision to attend a professional CE class was cost.

**Conclusions:** All five instruction-delivery modalities present useful structures for imparting professional CE. As librarians' experience with different modalities increases and as technology improves, preferences in instruction delivery may shift. But at present, face-to-face remains the most preferred modality. Based on the results of this study, cost was the most influential factor associated with attending a CE class. This may change as additional influential factors are identified and analyzed in future studies.

## INTRODUCTION

### Instruction-delivery modalities

This study examines five instruction modalities used by the American Library Association (ALA), Special Libraries Association (SLA), and Medical Library Association (MLA) for the purpose of professional continuing education (CE) [1–3]. The five modes of instruction are

- face-to-face
- web-based synchronous
- web-based asynchronous
- blended
- webcasts

Each professional CE instruction-delivery modality provides a specific learning environment and offers particular advantages and disadvantages.

Face-to-face instruction is the most traditional of instruction modalities [4]. The instructor and students are physically located in the same classroom, which facilitates personal interaction between the instructor and participants [5]. The instructor, to some degree, controls the structure of the learning environment, receives immediate feedback from participants, reorganizes the material to meet the needs of attendees, and provides more detailed explanations when necessary. The learning environment may be restricted by class size and the physical space [6]. Although travel costs and release time from work can be associated with face-to-face instruction, this modality

### Highlights

- Despite the many technological advances in the education arena, librarians prefer face-to-face instruction (direct interaction with instructors and other participants, hands-on experience, focused learning). This creates a dilemma as increased budgetary constraints are a barrier to attending face-to-face professional continuing education (CE) classes.
- Librarians in all age groups preferred the traditional classroom style of face-to-face instruction to web-based methods.

### Implications

- Instructors and course designers face a challenge in incorporating the perceived advantages of face-to-face instruction into the more affordable modalities of online instruction.
- As cost becomes more of a factor for attending professional CE classes, web-based asynchronous and synchronous modalities offer important, less expensive, alternatives.

offers the opportunity to focus exclusively on class content without interruption.

Web-based synchronous (real-time) instruction takes place via the Internet [7]. Both instructor and participant are online at the same time but are geographically separated by distance. Communication between the instructor and the students can



A supplemental appendix is available with the online version of this journal.

include video-conferencing, a telephone conference call, web-based audio, and/or text-based communication [8]. The instructor may display a slide presentation, demonstrate the use of software programs, and display websites. Participants receive immediate feedback from the instructor, thus improving clarity and strengthening the knowledgebase [9]. Typically, this mode of instruction has no associated travel cost. Learning occurs at the participant's desktop [7]. This mode of instruction might be especially preferable to solo librarians. Solo librarians can remain in the library while participating in the CE class. Web-based synchronous instruction translates into outreach to a larger population, as the instructor can offer web training to librarians located in rural areas. Although web-based synchronous instruction is more closely related to face-to-face instruction than other distance only modalities, participants are not exposed to body language or other social indicators that assist with the learning process [10]. Other disadvantages include the possibility of being interrupted during class and technological malfunctions. These issues have implications for both the student and the instructor.

The online tutorial is an example of an asynchronous instruction-delivery modality. Web-based asynchronous instruction does not occur in real time [7]. Advantages include web-based asynchronous instruction's flexibility to provide participants with stand-alone instruction, a self-paced environment, twenty-four-hour/seven-days-a-week accessibility, and availability from any computer with Internet access [11]. The instructional material is available online, but participants have no live interaction with the instructor. Asynchronous instruction is a frequently used modality because it generates just-in-time learning. Two types of asynchronous instruction exist, self-paced and facilitated. The facilitated asynchronous modality includes direction from an instructor with no real-time interaction and is seen most frequently in the academic environment. Assignments, if part of the curriculum, are posted on a website, via email, or by some other communication mode. Users may communicate with each other via discussion threads. Using this type of instruction, participants receive feedback from peers and the instructor. Even though the instruction is not live, participants must follow the curriculum and assignment due dates. With self-paced asynchronous instruction, users work through a tutorial or modules at times that are convenient for them. This modality is often seen in the academic and corporate world. To be effective, web-based asynchronous instruction requires a higher level of self-motivation from participants than face-to-face instruction [4].

Blended instruction combines different instructional modalities and technologies. It includes a mixture of traditional classroom instruction and web-based learning [4, 12]. Blended instruction offers unlimited design opportunities and is applicable for use in various learning environments [13]. It affords an atmosphere that promotes "critical, creative, and

complex thinking skills." Blended instruction provides a robust environment in which to incorporate multimedia that can add clarity and meaning to the content discussed in the classroom setting [14]. For example, knowledge retention of classroom content can be assessed by designing a web-based scenario [15]. Questions posed during classroom time can be elaborated on in an online discussion [4]. Because blended instruction incorporates aspects of the aforementioned delivery modalities, similar advantages and disadvantages exist.

The final instructional modality described for the purpose of this study is the webcast. A webcast uses streaming video to broadcast a live or previously recorded presentation that is viewed on a computer [16]. Interactivity between the presenters and audience during the webcast occurs via emailed or faxed questions. Only some questions are answered during the broadcast, limiting the amount of interactivity. Archives of the broadcast are available for a specified time. A CD or DVD version of the broadcast is sometimes available for purchase. The major advantages of webcasts are primarily economic: travel costs, if any, are minimal, and the enrollment fee can be minimized when more than one librarian attends the broadcast. As with any instructional modality, there are disadvantages. Instructors and panelists cannot gauge their effectiveness by looking out into the participant audience, and webcasts lack spontaneity due to their scripted nature.

### Effectiveness of web-based instruction

Web-based instruction is a relatively new delivery modality compared to face-to-face and, as such, has generated interest in its effectiveness. Inquiry into the efficacy of web-based instruction led to a number of published articles on the subject [17–20]. Results from some studies report no significant difference in the effectiveness of web-based instruction compared to face-to-face instruction, citing comparable assessment scores, assignment and participation grades, and final grades [21–23]. A comparison of web-based continuing medical education (CME) and face-to-face CME instruction resulted in comparable changes in behavior and sustained knowledge gain [24]. It appears that distance education (web-based or blended) may positively affect knowledge retention of course material due to the duration of time spent on course material, possible individual attention, and learner motivation [19].

One study measured the differences in web-based and face-to-face instruction in a college-level economics course by placing students into face-to-face and web-based groups [25]. The study provided evidence of higher test scores among students receiving face-to-face instruction. The importance of self-selection as a factor in increasing the effectiveness of web-based economics education was discussed: Individuals who choose a distance education course perform at a higher level than comparable randomly selected individuals.

A recent meta-analysis in *JAMA* "sought to answer (1) to what extent is Internet-based instruction associated with improved outcomes in health professions learners compared with no intervention, and (2) how does Internet-based instruction compare with non-Internet instructional methods?" [26]. The meta-analysis found that "Internet-based instruction appears to have a large effect compared with no intervention and appears to have an effectiveness similar to traditional methods" [26]. The meta-analysis also revealed that "Studies making comparison to alternate instructional media asked whether Internet-based learning is superior to (or inferior to) traditional methods. In contrast to no-intervention controlled studies, the answers to this question varied widely. Some studies favored the Internet, some favored traditional methods, and on average there was little difference between the 2 formats."

### Professional continuing education

Each of the five instruction-delivery modalities are used for the purpose of professional CE in the field of librarianship [1–3]. Although other institutions and organizations offer CE for librarians, this study focused on the three major library associations (ALA, SLA, MLA). CE provides the foundation for maintaining competency in many professions. Identifying national trends, staying abreast of current technology, and adding to the knowledgebase are integral parts of being a librarian. Without opportunities to enhance expertise, librarians' skills would stagnate. The Education Resources Information Center (ERIC), sponsored by the Institute of Education Sciences of the US Department of Education, uses the descriptor "professional continuing education" to designate the concept of "the education of adults in professional fields for occupational updating and improvement, usually [consisting] of short-term, intensive, specialized learning experiences often categorized by general field of specialization" [27]. The terms "continuing education (CE)" and "professional development" both refer to ERIC's concept of professional continuing education. Historically, librarianship CE credits were offered as in-person workshops, seminars, conferences, institutes, and lectures [28, 29]. Today, each library association offers some form of face-to-face and web-based instruction [1–3].

Founded in 1876, ALA is the oldest and largest library association in the world [30]. Its members include individuals in academic, public, and school libraries. ALA's Continuing Education Clearinghouse lists educational opportunities from ALA and affiliated units. Formats for delivery include face-to-face workshops and conferences as well as web-based instruction [1]. ALA markets professional CE classes on their website under the "in-person" and "online workshops" sections. ALA also offers certification and specialization beyond the initial library science degree. For example, certification as a public library administrator is available through ALA. In-person or

face-to-face CE is offered at ALA national meetings. Examples of in-person topics include diversity leadership and management skills. Some examples of topics covered during online workshops are virtual reference competencies, genealogy basics, and marketing skills.

SLA is an international organization that serves corporate, academic, and government information specialists. SLA offers face-to-face and online professional development opportunities, the latter offered through a program called Click U Live! The program includes live interactive web-based presentations [2] that are also recorded for later viewing. A sampling of webinar topics include electronic records retention, federated searching, and copyright. Like ALA, SLA offers certificate programs in areas such as competitive intelligence, knowledge management, and copyright. The face-to-face classes are available at SLA national meetings and cover topics related to meta-data, analysis of research trends, and marketing.

MLA is a professional organization for librarians in hospitals, academic health sciences centers, patient and family resource centers, and public libraries that provide consumer health information. In 1959, MLA began to develop and present CE classes as one- or two-day, in-person courses [31]. Now MLA offers a variety of CE programs in different formats, including face-to-face instruction, web-based classes, and live and recorded webcasts [3]. MLA's education website includes information about face-to-face and web-based courses and links to certification and specialization programs. Examples of face-to-face CE available at national meetings include emerging technologies and their applications, health measurement tools, and planning of consumer health libraries. Examples of web-based topics are new technology trends, evidence-based medicine, and understanding meta-analysis. Webcast topics cover a variety of subjects including disaster preparedness and the participatory web. The credentialing process for health sciences librarians is through membership in the Academy of Health Information Professionals (AHIP) [3]. MLA accepts CE credit as part of the academy membership process. MLA also offers a specialization in the area of consumer health and accepts CE credit toward attaining the specialization.

### Study hypothesis

This study does not seek to evaluate the effectiveness of different instructional modalities. The focus of the study is to discover (1) what instruction-delivery modalities librarians prefer and (2) what are the influential factors associated with selecting a CE class. This research study tested one main hypothesis: The majority of librarians prefer the face-to-face instructional modality. A secondary hypothesis was also tested: The most preferred instructional modality among the eighteen-to-twenty-four and twenty-five-to-thirty-five year age groups is web-based or blended. One study published in 1986 found that hospital librarians prefer short one-day, face-to-face



CE classes [32]. No other studies were located about librarian CE instructional modality preferences. Two studies regarding health care professionals indicated traditional face-to-face instruction as the preferred delivery modality [33, 34]. Cobb's article identified demographic data related to web-based CE participation and concluded that the studies "seem to support the fact that participants [in web-based CE] tend to be younger or more recent graduates" [33]. Of interest but not a hypothesis were the factors associated with making a decision to attend a CE class.

## METHODS

### Study population

ALA, SLA, and MLA members were contacted to participate in a brief online survey. It was assumed that most members of these library organizations participated in some form of professional CE. Prior to study initiation and online survey activation, the Penn State Hershey College of Medicine Human Subjects Protection Office Institutional Review Board granted the authors exempt status (IRB protocol no. 28306EM).

With a sample size of at least 195 respondents, a chi-square test of proportions with a two-sided 0.05 significance level will have 80% power to detect a difference between the null hypothesis proportion (0.55) and the alternative proportion (0.45). The average response rate for online surveys is roughly 41% [35]. The authors chose 195 respondents as the sample size and used a variety of methods to publicize the survey to members of the 3 library associations. A random sample of 1,012 MLA members received an email asking for their participation in the survey. ALA and SLA did not disclose member email addresses; therefore, their members were contacted in other ways. SLA members received a message via their email distribution list inviting participation in the survey. ALA Facebook members and an ALA group on the social networking site Ning.com received a request asking them to participate in the survey. Survey participation was somewhat self-selecting with a bias toward technologically savvy librarians. Because of this bias, the authors speculated that the web-based and blended modalities might rate high among librarian preferences but not as high as the face-to-face modality.

### Survey design and data analysis

The online survey sought to determine librarian preferences in instruction-delivery modalities for professional CE (Appendix, online only). The brief online survey was made available for a duration of three weeks. The eight-question online survey consisted of two sections covering (1) professional CE and (2) demographic data. The professional CE section asked respondents what type of professional CE instructional modalities they had experienced. The delivery modalities included (1) face-to-face, (2) web-

based synchronous, (3) web-based asynchronous, (4) blended instruction, and (5) webcasts. Definitions of web-based synchronous, web-based asynchronous, and blended instruction were included in the survey. The preferred delivery modalities were ranked on a scale of one to five, with one being the most preferred and five the least preferred. At the time of the survey, library associations were not using Web 2.0 technologies as a way to enhance the various instruction modalities [1–3], therefore Web 2.0 technologies were not included in the survey.

The survey also asked which factors influence respondents' decision to attend a professional CE class. Respondents were given a choice of six influential factors: (1) cost, (2) socializing or networking, (3) time away from work, (4) self-paced learning, (5) immediate access to instructor, and (6) immediate interaction with participants. The influential factors were ranked on a scale of one through five, with one being the most influential and five the least influential. Respondents were also asked about their experiences with CE offered by each of the three library associations (ALA, SLA, and MLA). The survey included an area for comments after the delivery modality and influential factors section. The demographic information asked respondents about the type of library in which they work, their library association membership, age range, and total years of library work experience.

To ensure reliability and validity, the survey was pretested with selected health sciences librarians, then administered online. The quantitative survey analysis tools used were SAS and Microsoft Excel. Respondents' comments were included in the spreadsheet. A public health sciences statistician at Penn State University analyzed the data. Descriptive statistics were generated, including means, medians, and standard deviations for continuous variables and frequency tables for categorical variables. Differences between groups for categorical variables were characterized using contingency table analysis, and significance levels were determined by Pearson's chi-square statistic, Cochran-Mantel-Haenszel statistic, and Fisher's exact test statistic. Significance levels for continuous variables were determined by two sample *t*-tests and analysis of variance.

## RESULTS

### Demographic information

A total of 328 librarians completed the survey; the majority (291) were MLA members, followed by ALA members (86) and SLA members (63). The total number of responses was greater than 328 as some respondents belong to more than 1 library association. The largest group of respondents was from academic health sciences libraries (131), followed in order by hospital libraries (110), academic non-health sciences libraries (33), special libraries (30), public libraries (16), and school, kindergarten through twelfth grade (K–12) (6). Two librarians did not identify the type of

**Table 1**  
Library association members' experience with instruction-delivery modalities

Modality	American Library Association members (n=86)		Medical Library Association members (n=291)		Special Libraries Association members (n=63)	
	n (%)		n (%)		n (%)	
Face-to-face	28	(32.6%)	257	(88.3%)	34	(54.0%)
Web-based synchronous	6	(7.0%)	99	(34.0%)	14	(22.2%)
Web-based asynchronous	15	(17.4%)	109	(37.5%)	10	(15.9%)
Blended	3	(3.5%)	49	(16.8%)	9	(14.3%)
Webcast	14	(16.3%)	214	(73.5%)	19	(30.2%)

library in which they work. The greatest number of respondents was in the 55–64 age group (128), followed in order by the 45–54 age group (106), 35–44 age group (46), 25–34 age group (33), 65+ age group (7), and 18–24 age group (4). Due to the low number of respondents in some of the age groups, results from the 18–24 and 25–34 age groups were combined in subsequent analysis, as were results from the 55–64 and 65+ age groups. Four librarians did not identify their age range. The greatest number of respondents had 21–30 years of experience as librarians (77), followed in order by 11–20 years (74), 30+ years (72), 5–10 years (53), and <5 years (48). Four librarians did not identify their years of experience. Not all librarians in the 45+ age groups responded to each survey question.

All survey respondents had experienced at least 1 of the instruction-delivery modalities. Face-to-face instruction was the most frequently experienced, followed in order by webcasts, web-based asynchronous instruction, web-based synchronous instruction, and blended instruction (Table 1). MLA members had experienced face-to-face instruction (88.3%) more frequently than ALA (32.6%) and SLA (54.0%) members. MLA members reported more experience with web-based synchronous, web-based asynchronous, blended, and webcasts compared to ALA and SLA members. Most striking was the difference in experience with webcasts.

### Librarian preferences

The majority of respondents preferred face-to-face instruction over blended, web-based asynchronous, web-based synchronous, or webcast ( $P<0.001$ ) (Table 2). Differences in preferences between the other modalities were not statistically significant, nor were there significant differences in preferences by age. The 35–44 age group had the highest percentage of individuals who ranked face-to-face as the most preferred delivery modality (82.6%), followed in order by the 55+ (79.4%), 18–34 (75.7%), and 45–54 (73.1%) age groups. A significant difference (CHM statistic=13.5,  $df=6$ ,  $P=0.04$ ) was found between ALA and MLA members, who ranked face-to-face instruction as the first preferred modality (78.6% and 78.4%, respectively) and web-based asynchronous instruction as the second (13.1%), and SLA members, who also ranked face-to-face instruction as the first preferred modality (74.6%) but ranked web-based synchronous instruction as the second (12.7%). There

were significant differences in preferences for web-based synchronous, web-based asynchronous, blended, and webcast preferences between those who had actually experienced one of these modalities and those who had not (Table 3).

### Influential factors

ALA, SLA, and MLA members all ranked cost as the most influential factor when deciding to attend a CE class. Cost was ranked significantly higher than any of the other factors ( $P<0.001$ ). Immediate access to instructor, the second most influential factor, was also ranked significantly higher than time away from work, immediate interaction with participants, self-paced learning, and socializing or networking ( $P<0.001$ ) (Table 4). There was no significant difference among the remaining factors—time away from work, immediate interaction with participants, self-paced learning, and socializing or networking—all of which received similar rankings. MLA and SLA members ranked socializing or networking and self-paced learning as the least influential factors, while ALA members ranked immediate interaction with participants, followed by socializing or networking as the least influential factors. The 45–55 age group had the highest percent of individuals who ranked cost as the most influential factor (49.0%), followed in order by the 35–44 (45.7%), 18–34 (40.5%), and 55+ (32.8%) age groups. However none of these differences was statistically significant.

### Anecdotal comments

Anecdotal comments submitted as part of the survey covered both instruction-delivery modalities and influential factors. Three influential factors not mentioned in the survey but identified through respon-

**Table 2**  
Professional continuing education instruction-delivery modality by order of preference and  $P$ -value preference comparison\*

Variable	n	Mean	Standard deviation
Face-to-face	321	1.37	0.76
Blended	293	2.91	1.24
Web-based asynchronous	302	2.92	1.25
Web-based synchronous	301	2.96	1.23
Webcast	305	3.18	1.28

\* Factors were ranked on a scale of 1–5, with 1 being the most preferred and 5 the least preferred.

**Table 3**

Preference ranking of individuals who experienced a delivery modality versus individuals who had not\*

Modality	Rank										P-values
	1		2		3		4		5		
<b>Face-to-face</b>											
No (n=10)	6	(60.0%)	1	(10.0%)	2	(20.0%)	0	—	1	(10.0%)	0.07
Yes (n=311)	241	(77.5%)	38	(12.2%)	27	(8.7%)	3	(1.0%)	2	(0.6%)	
<b>Web-based synchronous</b>											
No (n=112)	3	(2.7%)	18	(16.1%)	38	(33.9%)	24	(21.4%)	29	(25.9%)	<0.001
Yes (n=189)	28	(14.8%)	74	(39.2%)	43	(22.8%)	27	(14.3%)	17	(9.0%)	
<b>Web-based asynchronous</b>											
No (n=98)	3	(3.1%)	14	(14.3%)	28	(28.6%)	22	(22.4%)	31	(31.6%)	<0.001
Yes (n=204)	36	(17.6%)	73	(35.8%)	52	(25.5%)	29	(14.2%)	14	(6.9%)	
<b>Blended</b>											
No (n=193)	12	(6.2%)	59	(30.6%)	39	(20.2%)	51	(26.4%)	32	(16.6%)	<0.001
Yes (n=100)	22	(22.0%)	39	(39.0%)	20	(20.0%)	13	(13.0%)	6	(6.0%)	
<b>Webcast</b>											
No (n=63)	3	(4.8%)	8	(12.7%)	11	(17.5%)	18	(28.6%)	23	(36.5%)	<0.001
Yes (n=242)	20	(8.3%)	82	(33.9%)	56	(23.1%)	40	(16.5%)	44	(18.2%)	

\* Factors were ranked on a scale of 1–5, with 1 being the most preferred and 5 the least preferred.

dents' comments were: (1) location, (2) hands-on experience, and (3) time away from home. Location affected the decision to travel to a face-to-face class or a webcast hosted by an outside institution. Many respondents liked the idea of webcasts but had had negative experiences with them, reporting failure to sustain attendees' interest as a problem. The surveyed librarians liked the option of web-based asynchronous instruction and the ability to work at their own pace. However, some mentioned the proclivity to push aside class work for daily work. Respondents had positive comments about web-based synchronous instruction. It enables interaction among attendees and provides quick responses to questions. One individual wrote that not having experienced all of the different modalities affected ranking of the preferences. The modalities not experienced were ranked lower (Table 3). A few comments mentioned the difficulty in finding the funding and time to attend face-to-face classes. However, respondents still preferred the traditional classroom setting.

## DISCUSSION

### Data interpretation

Because the majority of librarians ranked face-to-face instruction as the most preferred instructional modal-

ity, the primary hypothesis holds true. The majority of respondents in the 18–34 age group chose face-to-face as the preferred instructional modality. Therefore the secondary hypothesis—the most preferred instructional modality among the 18–34 age group is web-based or blended—was not corroborated by the results. One interpretation of the results is found in Hagel's article, "Students' Perceptions of Study Modes," in which he suggests that the face-to-face mode is more engaging than web-based modalities [20]. The results reported here support his findings. Interestingly but not statistically significant, the 18–34 age group ranked socializing or networking and time away from work as their second and third most influential factors. This might have some connection to their preference of the face-to-face instructional modality. A few respondents who had not experienced the face-to-face modality nevertheless ranked it as their first choice.

In their provision of CE, library associations must consider developing instruction to meet the needs and preferences of their clientele. For example, associations might consider offering additional CE classes with face-to-face instruction at lower costs. This might be accomplished in various ways, including partnering with other library associations, providing shorter classes, and applying for grants to fund presenters. With face-to-face as the exception, those who had experienced a delivery modality were more likely to rank it higher among other choices, therefore library associations could create and market additional web-based and blended CE classes.

### Limits of the study

Several limitations of the study were identified. Because the authors assumed that content was the most influential factor in making the decision to attend a CE course, content was not included as a selection in the survey section about influential factors for taking a CE course. To confirm this, content should have been included in the survey as an influential factor. Another influential factor that could have been added to the

**Table 4**

Influential factors associated with attending continuing education classes

Variable	n	Mean	Standard deviation
Cost	314	2.13	1.33
Immediate access to instructor	311	2.67	1.48
Time away from work	308	3.20	1.76
Immediate interaction with participants	308	3.20	1.62
Self-paced learning	299	3.30	1.46
Socializing or networking	304	3.33	1.52

\* Factors were ranked on a scale of 1–5, with 1 being the most influential and 5 the least influential.



survey was certification or credentialing programs, such as the Academy for Health Information Professionals. The requirements of these programs might impact a decision to attend CE classes.

Less than half of ALA and SLA members had experienced web-based, blended, and webcasts, and less than half of MLA members had experienced web-based and blended instruction. It is difficult to rate modalities by preference when individuals have not experienced all of them. The majority of individuals who had not experienced web-based synchronous instruction ranked it as the third most preferred delivery modality. The majority of those who had not experienced web-based asynchronous or webcasts ranked them as the least preferred modality. Blended was ranked second by the majority of individuals who had not experienced this modality.

Finally, because ALA and SLA did not disclose member email addresses, their membership was underrepresented in the survey. Results were not weighted to address underrepresentation of ALA and SLA members.

### Future research

Future studies may investigate whether the optimal type of instructional modality depends on class content. For example, an introductory class about web design may not be well suited for a webcast but may require a modality that utilizes hands-on practice. Face-to-face, web-based synchronous instruction, web-based asynchronous instruction, or blended instruction might be more appropriate for the topic of web design, whereas a class about library marketing can effectively use all instruction modalities. As technology improves and modalities other than face-to-face instruction are offered more frequently, the preference for web-based or blended modalities may increase. Future studies using a larger sample of librarians from ALA and SLA might provide further insights into delivery modality preferences.

Other questions for future research include: Does the preferred instructional modality vary depending on the types of learning objectives? Does the preferred instructional modality vary depending on class structure, such as short-term courses versus multiple-session, long-term courses? How will Web 2.0 tools be used to supplement the different instruction-delivery modalities? How will mobile technology affect the delivery of instruction?

### CONCLUSION

Despite the increase in instructional modalities and improved technology, results from this study indicate that face-to-face remains the most preferred modality among librarians. However, preference of one modality does not negate the others' usefulness. Each of the five instruction-delivery modalities—face-to-face, web-based synchronous, web-based asynchronous, blended, and webcast—offers an opportunity to

participate in professional CE. These venues offer librarians different delivery modality options that suit their current needs and learning environment. With the advent of new technology, the diversity of modalities for professional CE classes will become more abundant. As librarians experience more of the instruction-delivery modalities, preferences may remain consistent with results from this study or shift in favor of web-based or blended. Results from this study also identified cost as the most influential factor related to attending a CE class. Future studies may identify other factors influencing decisions to attend CE classes. Understanding individual preferences and influential factors associated with attending CE classes will enable library associations to better serve the changing educational needs of their clientele.

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*Received April 2009; accepted July 2009*